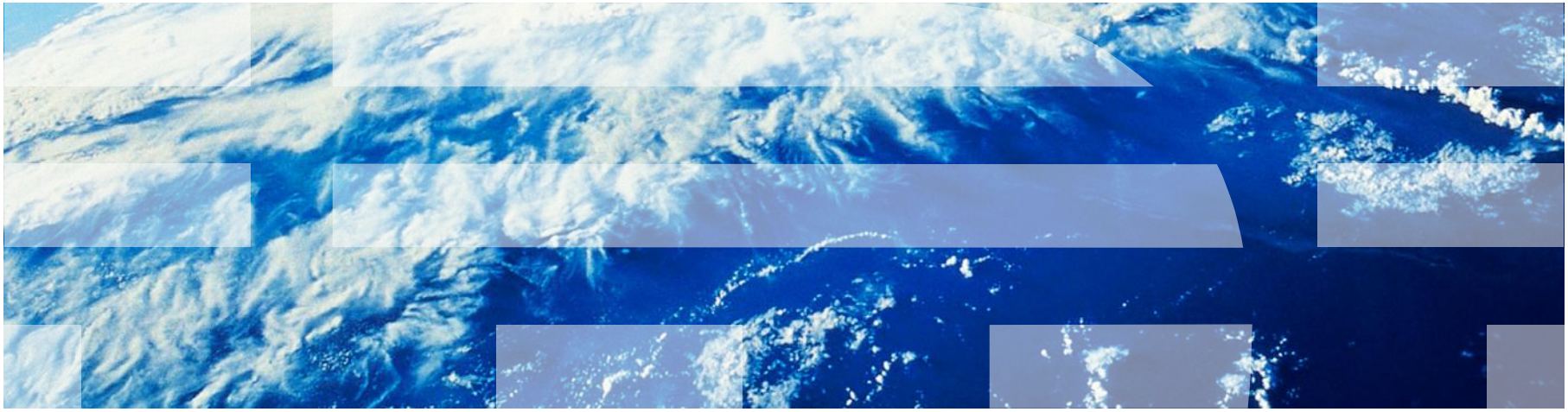
IBM Worklight Foundation V6.2.0 Getting Started

Using the LDAPLoginModule class to authenticate users with LDAP server in hybrid applications



20 June 2014

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Agenda

- LdapLoginModule overview
- Configuring the authenticationConfig.xml file
- Creating the client-side authentication components
- Examining the result

LdapLoginModule overview

- You can use the **LdapLoginModule** class to authenticate users with LDAP servers such as OpenLDAP or Active Directory.
- The **LdapLoginModule** class implements the **UserNamePasswordLoginModule** interface. Therefore, it must be used in conjunction with an authenticator that implements the **UsernamePasswordAuthenticator** interface. For example: **FormBasedAuthenticator**.
- For more information about how to implement **UsernamePasswordAuthenticator** interface, see module *Custom Authenticator and Login Module* in Table 9 of Tutorials and samples.
- In the following slides, you learn how to configure and use the **LdapLoginModule** class to protect various Worklight entities.

Agenda

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- Configuring the authenticationConfig.xml file
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- Examining the result

Configuring the authenticationConfig.xml file (1 of 10)

- Add an authentication realm to the `<realms>` section of the **authenticationConfig.xml** file and call it **LDAPRealm.**

```
<realms>
    <realm loginModule="LDAPLoginModule" name="LDAPRealm">
        <className>com.worklight.core.auth.ext.FormBasedAuthenticator</className>
        <onLoginUrl>/console</onLoginUrl>
    </realm>
</realms>
```

- Use **FormBasedAuthenticator** in the `<className>` element because it implements the required **UsernamePasswordAuthenticator** interface.
- This realm uses **LDAPLoginModule** as a login module, which you define later.

Configuring the authenticationConfig.xml file (2 of 10)

- Add a login module to the `<loginModules>` section and call it **LDAPLoginModule**.

```
<loginModule name="LDAPLoginModule">
    <className>com.worklight.core.auth.ext.LdapLoginModule</className>
    <parameter name="ldapProviderUrl" value="ldap://10.0.1.2"/>
    <parameter name="ldapTimeoutMs" value="2000"/>
    <parameter name="ldapSecurityAuthentication" value="simple"/>
    <parameter name="validationType" value="searchPattern"/>
    <parameter name="ldapSecurityPrincipalPattern" value="{username}@myserver.com"/>
    <parameter name="ldapSearchFilterPattern" value="(&amp;(objectClass=user)(sAMAccountName={username})(memberof=
    <parameter name="ldapSearchBase" value="dc=myserver,dc=com"/>
</loginModule>
```

- Use **com.worklight.core.auth.ext.LdapLoginModule** in the `<className>` element.

Configuring the authenticationConfig.xml file (3 of 10)

- Add a login module to the `<loginModules>` section and call it **LDAPLoginModule**.

```
<loginModule name="LDAPLoginModule">
    <className>com.worklight.core.auth.ext.LdapLoginModule</className>
    <parameter name="ldapProviderUrl" value="ldap://10.0.1.2"/>
    <parameter name="ldapTimeoutMs" value="2000"/>
    <parameter name="ldapSecurityAuthentication" value="simple"/>
    <parameter name="validationType" value="searchPattern"/>
    <parameter name="ldapSecurityPrincipalPattern" value="{username}@myserver.com"/>
    <parameter name="ldapSearchFilterPattern" value="(&amp;(objectClass=user)(sAMAccountName={username})(memberof=
    <parameter name="ldapSearchBase" value="dc=myserver,dc=com"/>
</loginModule>
```

- The **ldapProviderUrl** parameter is mandatory. It defines the URL of your LDAP server.

Configuring the authenticationConfig.xml file (4 of 10)

- Add a login module to the `<loginModules>` section and call it **LDAPLoginModule**.

```
<loginModule name="LDAPLoginModule">
    <className>com.worklight.core.auth.ext.LdapLoginModule</className>
    <parameter name="ldapProviderUrl" value="ldap://10.0.1.2"/>
    <parameter name="ldapTimeoutMs" value="2000"/>
    <parameter name="ldapSecurityAuthentication" value="simple"/>
    <parameter name="validationType" value="searchPattern"/>
    <parameter name="ldapSecurityPrincipalPattern" value="{username}@myserver.com"/>
    <parameter name="ldapSearchFilterPattern" value="(&amp;(objectClass=user)(sAMAccountName={username})(memberof=
    <parameter name="ldapSearchBase" value="dc=myserver,dc=com"/>
</loginModule>
```

- The **ldapTimeoutMs** parameter is mandatory. It defines the timeout for LDAP server requests (in milliseconds).

Configuring the authenticationConfig.xml file (5 of 10)

- Add a login module to the `<loginModules>` section and call it **LDAPLoginModule**.

```
<loginModule name="LDAPLoginModule">
    <className>com.worklight.core.auth.ext.LdapLoginModule</className>
    <parameter name="ldapProviderUrl" value="ldap://10.0.1.2"/>
    <parameter name="ldapTimeoutMs" value="2000"/>
    <parameter name="ldapSecurityAuthentication" value="simple"/>
    <parameter name="validationType" value="searchPattern"/>
    <parameter name="ldapSecurityPrincipalPattern" value="{username}@myserver.com"/>
    <parameter name="ldapSearchFilterPattern" value="(&amp;(objectClass=user)(sAMAccountName={username})(memberof=
    <parameter name="ldapSearchBase" value="dc=myserver,dc=com"/>
</loginModule>
```

- The **ldapSecurityAuthentication** parameter is mandatory. It defines the type of authentication that is required by LDAP server. The usual value is `simple`, but you might need to contact LDAP administrator for a more appropriate value.

Configuring the authenticationConfig.xml file (6 of 10)

- Add a login module to the `<loginModules>` section and call it **LDAPLoginModule**.

```
<loginModule name="LDAPLoginModule">
    <className>com.worklight.core.auth.ext.LdapLoginModule</className>
    <parameter name="ldapProviderUrl" value="ldap://10.0.1.2"/>
    <parameter name="ldapTimeoutMs" value="2000"/>
    <parameter name="ldapSecurityAuthentication" value="simple"/>
    <parameter name="validationType" value="searchPattern"/>
    <parameter name="ldapSecurityPrincipalPattern" value="{username}@myserver.com"/>
    <parameter name="ldapSearchFilterPattern" value="(&amp;(objectClass=user)(sAMAccountName={username})(memberof=
    <parameter name="ldapSearchBase" value="dc=myserver,dc=com"/>
</loginModule>
```

- The **validationType** parameter is mandatory. It defines the type of validation that is performed. LdapLoginModule supports three types of validation: **exists**, **searchPattern,** and **custom**.

Configuring the authenticationConfig.xml file (7 of 10)

- The **validationType** parameter takes one of the following values:
  - **exists:** The login module tries to establish the LDAP binding by using the supplied credentials. The validation of the credentials is considered successful when binding is successfully established.
  - **searchPattern**: The login module first tries to run the **exists** validation. After such validation is successful, the login module issues a search query to the LDAP server context according to the **ldapSearchFilterPattern** and **ldapSearchBase** parameters. Credential validation is considered successful if a search query returns one or more entries.
  - **custom**: Use this value to enable a custom validation logic. The login module tries to run the **exists** validation After such validation is successful, the login module calls the `public boolean doCustomValidation(LdapContext ldapCtx, String username)` method. You can override this method by creating a custom Java™ class in your Worklight project and extending the `com.worklight.core.auth.ext.UserNamePasswordLoginModule` class**.**
    For more information about custom LDAP validation types, see the IBM® Worklight® Foundation user documentation.

Configuring the authenticationConfig.xml file (8 of 10)

- Add a login module to the `<loginModules>` section and call it **LDAPLoginModule**.

```
<loginModule name="LDAPLoginModule">
    <className>com.worklight.core.auth.ext.LdapLoginModule</className>
    <parameter name="ldapProviderUrl" value="ldap://10.0.1.2"/>
    <parameter name="ldapTimeoutMs" value="2000"/>
    <parameter name="ldapSecurityAuthentication" value="simple"/>
    <parameter name="validationType" value="searchPattern"/>
    <parameter name="ldapSecurityPrincipalPattern" value="{username}@myserver.com"/>
    <parameter name="ldapSearchFilterPattern" value="(&amp;(objectClass=user)(sAMAccountName={username})(memberof=
    <parameter name="ldapSearchBase" value="dc=myserver,dc=com"/>
</loginModule>
```

- The **ldapSecurityPrincipalPattern** parameter is mandatory. It defines the pattern in which LDAP security principal is sent to the LDAP server. You can use a `{username}` placeholder to inject the user name from the authenticator.

Configuring the authenticationConfig.xml file (9 of 10)

- Add a login module to the `<loginModules>` section and call it **LDAPLoginModule**.

```
<loginModule name="LDAPLoginModule">
    <className>com.worklight.core.auth.ext.LdapLoginModule</className>
    <parameter name="ldapProviderUrl" value="ldap://10.0.1.2"/>
    <parameter name="ldapTimeoutMs" value="2000"/>
    <parameter name="ldapSecurityAuthentication" value="simple"/>
    <parameter name="validationType" value="searchPattern"/>
    <parameter name="ldapSecurityPrincipalPattern" value="{username}@myserver.com"/>
    <parameter name="ldapSearchFilterPattern" value="(&amp;(objectClass=user)(sAMAccountName={username}))(memberof=
    <parameter name="ldapSearchBase" value="dc=myserver,dc=com"/>
</loginModule>
```

- The **ldapSearchFilterPattern** and **ldapSearchBase** parameters are optional. They apply only to the **searchPattern** validation type.

Configuring the authenticationConfig.xml file (10 of 10)

- Add a security test to the `<securityTests>` section of the **authenticationConfig.xml** file.
- You use this security test to protect the adapter procedure. Therefore, use the `<customSecurityTest>` element**.**

```
<customSecurityTest name="LDAPSecurityTest">
    <test isInternalUserID="true" realm="LDAPRealm"/>
</customSecurityTest>
```

- Remember the security test name because you use it in the following slides.

Agenda

- LdapLoginModule overview
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- Creating the client-side authentication components
- Examining the result

Creating the client-side authentication components (1 of 14)

- Create a Worklight application.
- The application consists of two main `<div>` elements:
  - The **`<div id="AppBody">`** element is used to display the application content.
  - The **`<div id="AuthBody">`** element is used for authentication forms.
- When authentication is required, the application hides the `AppBody` element and shows the `AuthBody` element.
- When authentication is complete, it does the opposite.

Creating the client-side authentication components (2 of 14)

- Start by creating an AppBody.
- It has a basic structure and functions.

```
<div id="AppDiv">
    <div class="header">
        <h1>LDAPApp</h1>
    </div>
    <div class="wrapper">
        <input type="button" value="Call protected adapter proc" onclick="getSecretData()" />
        <input type="button" value="Logout"
               onclick="WL.Client.logout('LDAPRealm',{onSuccess: WL.Client.reloadApp})" />
    </div>
    <div id="resultDiv"></div>
</div>
```

- The buttons are used to call the **getSecretData** procedure and to log out.

Creating the client-side authentication components (3 of 14)

- The AuthBody element contains the following subelements:

```
<div id="AuthDiv" style="display:none">
    <div id="loginForm">
        Username:<br/>
        <input type="text" id="usernameInputField" value=""/><br />
        Password:<br/>
        <input type="password" id="passwordInputField" value=""/><br/>
        <input type="button" id="loginButton" value="Login" />
        <input type="button" id="cancelButton" value="Cancel" />
    </div>
</div>
```

  - A Username and a Password input fields.
  - A Login button and a Cancel button.
- The AuthBody is styled as `display:none`, because it must not be displayed before authentication is requested by server.

Creating the client-side authentication components (4 of 14)

- Finally, create a challenge handler.
- Use the following API to create this handler and implement its functionality.

```
var myChallengeHandler = WL.Client.createChallengeHandler("realm-name");

myChallengeHandler.isCustomResponse = function (response){
    return false;
};

myChallengeHandler.handleChallenge = function (response){
};
```

Use the **WL.Client.createChallengeHandler** method to create a challenge handler object. Supply a realm name as a parameter.

Creating the client-side authentication components (5 of 14)

- Finally, create a challenge handler.
- Use the following API to create this handler and implement its functionality.

```
var myChallengeHandler = WL.Client.createChallengeHandler("realm-name");

myChallengeHandler.isCustomResponse = function (response){
    return false;
};

myChallengeHandler.handleChallenge = function (response){
};
```

The **isCustomResponse** function of the challenge handler is called each time a response is received from the server. That function is used to detect whether the response contains data that are related to this challenge handler. It must return **true** or **false.**

Creating the client-side authentication components (6 of 14)

- Finally, create a challenge handler.
- Use the following API to create this handler and implement its functionality.

```
var myChallengeHandler = WL.Client.createChallengeHandler("realm-name");

myChallengeHandler.isCustomResponse = function (response){
    return false;
};

myChallengeHandler.handleChallenge = function (response){
};
```

If the **isCustomResponse** method returns **true**, the framework calls the **handleChallenge** function. This function is used to perform required actions, such as hide the application screen or show the login screen.

Creating the client-side authentication components (7 of 14)

- In addition to the methods that the developer must implement, the challenge handler contains functionality that the developer might want to use:
  - The `submitLoginForm` function sends collected credentials to a specific URL. The developer can also specify request parameters, headers, and callbacks.
  - The `submitSuccess` function notifies the Worklight framework that the authentication process completed successfully. The Worklight framework then automatically issues the original request that triggered authentication.
  - The `submitFailure` function notifies the Worklight framework that the authentication process completed with failure. The Worklight framework then disposes of the original request that triggered the authentication.

  **** Note: You must attach each of these functions to its object. For example:*** *`myChallengeHandler.submitSuccess()`*

- You use these functions during the implementation of the challenge handler in the next slides.

Creating the client-side authentication components (8 of 14)

- Create a challenge handler.

```
var LDAPRealmChallengeHandler = WL.Client.createChallengeHandler("LDAPRealm");

LDAPRealmChallengeHandler.isCustomResponse = function(response) {
    if (!response || !response.responseText) {
        return false;
    }
    var idx = response.responseText.indexOf("j_security_check");

    if (idx >= 0){
        return true;
    }
    return false;
};

LDAPRealmChallengeHandler.handleChallenge = f
        $('#AppDiv').hide();
        $('#AuthDiv').show();
        $('#passwordInputField').val('');
};
```

The default login form that is returned from the Worklight server contains the `j_security_check` string. If the challenge handler detects it in the response, it returns **true**.

Creating the client-side authentication components (9 of 14)

- Create a challenge handler.

```
var LDAPRealmChallengeHandler = WL.Client.createChallengeHandler("LDAPRealm");

LDAPRealmChallengeHandler.isCustomResponse = fun
    if (!response || !response.responseText) {
        return false;
    }
    var idx = response.responseText.indexOf("j_s

    if (idx >= 0){
        return true;
    }
    return false;
};

LDAPRealmChallengeHandler.handleChallenge = function(response){
        $('#AppDiv').hide();
        $('#AuthDiv').show();
        $('#passwordInputField').val('');
};
```

After the client application detects that the server sent a login form, which means that the server is requesting authentication, the application hides the AppBody, shows the AuthBody, and cleans up the **passwordInputField**.

Creating the client-side authentication components (10 of 14)

- Create a challenge handler.

```
$('#loginButton').bind('click', function () {
    var reqURL = '/j_security_check';
    var options = {};
    options.parameters = {
            j_username : $('#usernameInputField').val(),
            j_password : $('#passwordInputField').val()
    };
    options.headers = {};
    LDAPRealmChallengeHandler.submitLoginForm(reqURL, options,
            LDAPRealmChallengeHandler.submitLoginFormCallback);
});

$('#cancelButton').bind('click', function (
    $('#AppDiv').show();
    $('#AuthDiv').hide();
    LDAPRealmChallengeHandler.submitFailure
});
```

A click on a **login** button triggers a function that collects the user name and password from the HTML input fields and submits them to the server.
It is possible to set request headers here, and to specify callbacks.

Creating the client-side authentication components (11 of 14)

- Create a challenge handler.

```
$('#loginButton').bind('click', function () {
    var reqURL = '/j_security_check';
    var options = {};
    options.parameters = {
            j_username : $('#usernameInputField').val(),
            j_password : $('#passwordInputField').val()
    };
    options.headers = {};
    LDAPRealmChallengeHandler.submitLoginForm(reqURL, options,
            LDAPRealmChallengeHandler.submitLoginFormCallback);
});

$('#cancelButton').bind('click', function (
    $('#AppDiv').show();
    $('#AuthDiv').hide();
    LDAPRealmChallengeHandler.submitFailure
});
```

The form-based authenticator uses the hardcoded `j_security_check` URL component. You cannot have more than one instance of it.

Creating the client-side authentication components (12 of 14)

- Create a challenge handler.

```
$('#loginButton').bind('click', function (
    var reqURL = '/j_security_check';
    var options = {};
    options.parameters = {
            j_username : $('#usernameInput
            j_password : $('#passwordInput
    };
    options.headers = {};
    LDAPRealmChallengeHandler.submitLoginF
            LDAPRealmChallengeHandler.submitLogin
});

$('#cancelButton').bind('click', function () {
    $('#AppDiv').show();
    $('#AuthDiv').hide();
    LDAPRealmChallengeHandler.submitFailure();
});
```

A click on a **cancel** button hides the authBody, shows the appBody, and notifies the Worklight framework that authentication failed.

Creating the client-side authentication components (13 of 14)

- Create a challenge handler.

```
LDAPRealmChallengeHandler.submitLoginFormCallback = function(response) {
    var isLoginFormResponse = LDAPRealmChallengeHandler.isCustomResponse(response);
    if (isLoginFormResponse){
        LDAPRealmChallengeHandler.handleChallenge(response);
    } else {
        $('#AppDiv').show();
        $('#AuthDiv').hide();
        LDAPRealmChallengeHandler.submitSuccess();
    }
};
```

The callback function checks the response for the containing server challenge again. If a challenge is found, the `handleChallenge` function is called again.

Creating the client-side authentication components (14 of 14)

- Create a challenge handler.

```
LDAPRealmChallengeHandler.submitLoginFormCallback = function(response) {
    var isLoginFormResponse = LDAPRealmChallengeHandler.isCustomResponse(response);
    if (isLoginFormResponse){
        LDAPRealmChallengeHandler.handleChallenge(response);
    } else {
        $('#AppDiv').show();
        $('#AuthDiv').hide();
        LDAPRealmChallengeHandler.submitSuccess();
    }
};
```

No challenge present in the server response means that authentication completed successfully. In this case, AppBody is shown, AuthBody is hidden, and the Worklight framework is notified about the authentication success.

Agenda

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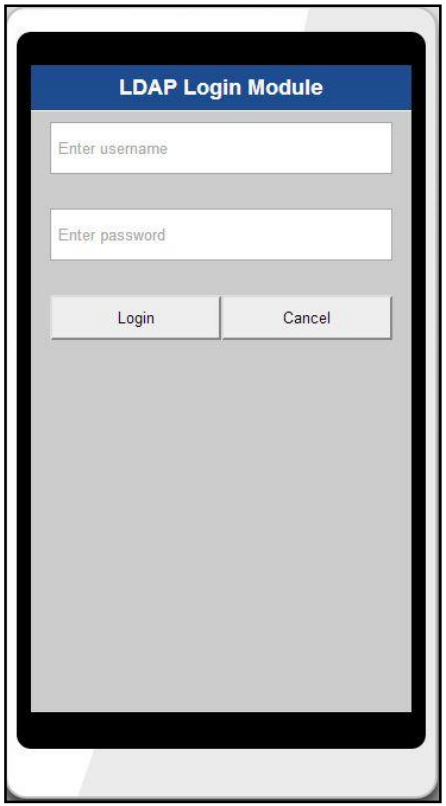
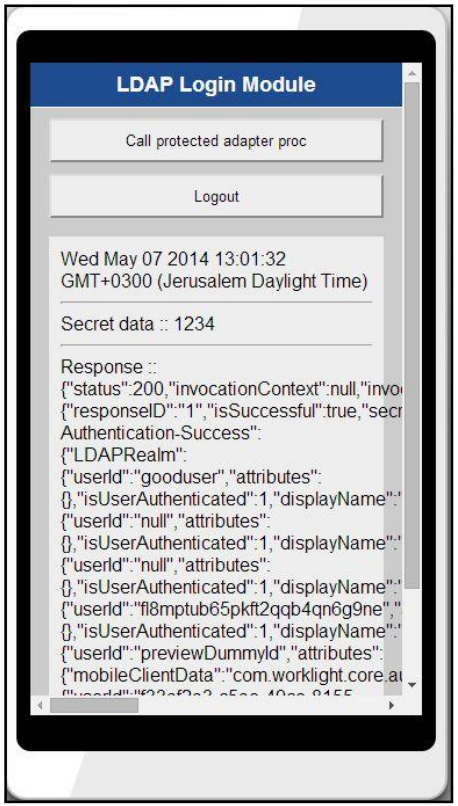
Examining the result

- You can find the sample for this training module in the Getting Started page of the IBM Worklight Foundation documentation website at http://www.ibm.com/mobile-docs.





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